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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,070

11/27/2007

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EXAMINER

BRODIE, MARGARET

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

06/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,070	Applicant(s) BRITO LOPES ET AL.	
	Examiner MARGARET BRODIE	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 4,5, and 8-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/26/2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/26/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, corresponding to claims 1-3 and 6-7 in the reply filed on 5/4/2009 is acknowledged.
2. Claims 4-5 and 8-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5/4/2009

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. **Claims 3, 6, and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**
 - a. Claim 3: the limitation "pressure taps" is not defined in the spec. The examiner interprets the location of the transducer pressure taps will inherently be upstream of the injectors if the transducer itself is upstream of the injectors.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Begemann et al. (US 2004/0130049 A1) or Soehtic (US 4944599) in view of Hagen et al. (US 20050056313).

Begemann et al teaches a Reaction Injection Process (RIM) where differential pressure transducers (13) are located upstream of injectors (8) and are used to measure the pressures of the components and send the data to a monitoring device (15) (paragraph 0023 and Figure 3). Soehtic teaches a RIM mixing device (Figure 1) with an automatically controlled pressure nozzle adjustment. A differential pressure transducer (27) is located upstream of the injectors (3) (Figures 1 and 3).

Begemann and Soehtic do not expressly disclose using pulsation, frequency, and amplitude to detect flow patterns and improve fluid mixing.

Hagen teaches a method and apparatus for mixing fluids. Users control the dynamic mean differential ejection pressure of the fluid and the dynamic fluctuating gradient of the differential ejection pressure (Paragraph 1048). Controlling these variables enable users to control the static and dynamic distribution and profile of the rate of fluid flow (Paragraph 1049). Users can control or meter fluid flows, including frequency, amplitude and pulse. These are similarly used to modulate the relative fluid mixings (Paragraph 0050). A differential pressure modulation system (370) is used to

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vary fluid pressure and control fluid delivery rates (Paragraph 1067-1069). Hagen also teaches generating vibrations in the tubes to cause jet oscillations (Paragraph 1058-1064). These oscillations will inherently be combined with the natural pulsation resulting from mixing. The combined artificial and natural pulsation will be measured in the same manner as the natural pulsation of instant claim 1. The vibrator may be mechanically and/or hydraulically or electromagnetically excited (Paragraph 0060). Users may also oscillate the tubes at a specific frequency to encourage uniform micro-jets. Frequency is calculated as a function of velocity (See Paragraph 1064 equation). Since velocity is a function of pressure, the equation calculates frequency as a function of pressure.

It would be obvious to one having ordinary skill in the art to at the time the invention was made to monitor and adjust dynamic pressure, i.e. pulse amplitude, and pulse frequency to modulate fluid mixing as taught by Hagen in the RIM process of Begemann or Soechtig. The rational to do so would have been the motivation provided by the teachings of Hagen that to do so would predictably improve mixing quality. (Abstract).

Conclusion

All claims are rejected

Prior art made of record but not relied on in this rejection is considered pertinent to applicants disclosure.

- Wei et al. (20020060379) - teaches an apparatus for altering the physical properties of fluids using pressure, frequency, and amplitude.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARGARET BRODIE whose telephone number is (571)270-7713. The examiner can normally be reached during normal business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khanh Nguyen can be reached on 571-272-1036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARGARET BRODIE/
Examiner, Art Unit 1791

/Khanh P. Nguyen/
Primary Examiner

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